Nitric Acid From the Atmosphere Planned As Preparedness Measure

—By— Rene Bache

Sites for Two Big Plants in the United States Urged; Germany Solves Problem When Chilean Supply Is Cut Off By War.

WASHINGTON, D. C., June 3.—The idea that Uncle Sam shall take up the business of manufacturing nitric acid from atmospheric air, as a measure of preparedness against possible war, has met with much opposition in congress largely because of its total novelty. Then, too, it is an expansive project, costing $20,000 as finally agreed upon.

But neither gunpowder nor high explosives can be made without nitric acid, which is obtainable from only two sources—the saltpeter deposits of Chile and the air that encompasses the earth. As for the former, it is believed that, in the event of war, an enemy's navy, even though much inferior to that of the United States, could make impracticable the transport of saltpeter over the long ocean route from Chile to this country.

Air Supply Unlimited.

On the other hand, the supply of nitric acid obtainable from the air is unlimited and inexhaustible. But to build and put in operation the requisite plants would require at least a year, and meanwhile we should be without adequate supplies of the chief essential for fighting purposes.

Discussion of the matter by our military authorities has brought out some remarkable and very interesting facts. It appears that, when the present conflict broke out, Germany had on hand about 660,000 tons of Chile saltpeter, representing a value of $20,000,000. This stock was exhausted during the early months of the war, and the kaiser's government, being cut off from further supplies, would long ago have been driven to accept defeat, but for the circumstance that it was able to get nitric acid from the air.

There were already a number of plants in operation for the purpose in Germany, deriving their power from falling water. But additional plants were built with utmost possible expedition, and steam power (though not economical under ordinary circumstances) was largely utilized, augmenting the total energy previously employed by an equivalent of 300,000 continuous 24-hour horsepower.

Germany Well Supplied Now.

Thus it will be understood how it is that Germany today, though unable to obtain any saltpeter from Chile, maintains without difficulty the huge supply of explosives which have been her main reliance for the winning of the war. That country's most important water-power plants for the production of nitric acid are in the Bavarian Alps. These have been taken over by the German government.

What, it may be asked, are the Allies doing for nitric acid? Of course, the Chilean saltpeter beds are readily accessible to them; but so gigantic is their requirement for the chief essential of explosives-manufacture that they are depending for supplies mainly upon factories in Norway, which are owned and controlled by British and French capital. These plants are now being run night and day, a single group of them employing 250,000 continuous horsepower.

Artificial Is Cheapest.

In other words, notwithstanding that the Chile deposits are open to England and France, and readily accessible, those countries prefer to rely upon sources of supply nearer at hand. There is the additional advantage that nitric acid, derived from atmospheric air, and imported from Norway, is decidedly cheaper than that obtainable from Chile saltpeter.

In Norway—a region of steep waterfalls and fairly uniform rainfall throughout the year—water power is remarkably cheap. Nowhere else in the world, unless in China, are there such opportunities for developing cheap water-power. For example, at Thelemeken, one can stand at the edge of a fall 300 feet above the sea, and look down the hatch of a ship floating in 60 feet of salt water. A big river comes to the edge and drops almost vertically over the cliff. To divert what is wanted of it into pipes, and so, with the help of turbines, to convert its fall into utilizable energy, is a simple matter.

It would take the entire amount of energy now developed at Niagara Falls to equal the water-power that is furnishing the Allies with nitric acid for their explosives. This, too, notwithstanding the fact that (according to the testimony of experts before the military committee of the house of representatives) we are now supplying $700,000 worth of explosives a day to England, France and Russia.

Is Different Now.

Explosives today have a significance in war that they have never hitherto possessed. In former days war was conducted by the firing of what might be called individual missiles. Today each firearm throws its projectiles in such a way that it is like a hose discharging a leaden stream. The battle attack of today is the playing of a sheet of metal at such velocity and in such volume that it sweeps everything clean, down to the underlying rock.

Should this country be precipitated into a great war within the next few months, and before the establishment of nitric acid plants within its borders, it would be without means to obtain gunpowder and high explosives, lacking which it would be helpless. Explanation is hardly needed that the private concerns now engaged in manufacturing such immense quantities of those products, for shipment from America to the Allies, depend wholly upon Chilean saltpeter for the prime essential of their output. Deprived of the latter, they, like the government, would be put out of business.

Inevitably, in the course of time, the nitric acid industry will be established commercially in the United States. But its growth will be very slow. The only kind of power that can be economically employed for the purpose is water power; but, unfortunately, our laws, both States and Federal, are so framed as to throw obstacles in the way of the development of such powers. In the meantime, we have found ourselves confronted by an emergency, and the only way out of the difficulty was for the government to step in.

Used For Fertilizer in Peace Time.

The production of the contemplated government plant should be at least 150,000 tons of nitric acid per annum, or two-thirds of the present estimated requirement of the German army. In peace time the bulk of the output of the plant will be sold for fertiliser, the government needing for its own use only 50,000 tons of the acid yearly, for the army and navy.

The plant cannot be placed in full operation in less than a year. It will require a large number of specially-trained men, and to train them will take time.

Two Sites Urged.

Two sites for a plant of this kind have been strongly recommended to congress, one on the Columbia river, at Priest Rapids, and the other at Muscle Sheals, on the Tennessee river, in northern Alabama. There might, of course, be several plants. One would be most economical; but it would have to be so located as to be safe from an enemy's attack. And it is worth considering that an enemy would inevitably try to destroy such an outfit by blowing it up—perhaps attacking with dynamite the dam from which it derived its power.

There is, unluckily, no such cheap water power to be found in this country as that obtainable in Norway, where electricity thus derived can be furnished at one-fourth or even one-sixth the price. In the Appalachians there is a rainy season and a dry season, and the flow of streams in that region is correspondingly variable.

The greatest water-power center of the world is Niagara Falls. But (say the experts) it would take three Niagras, if all the available power were utilized, to produce enough nitric acid to supply the needs of the United States for fertilizers and explosives. It is worth mentioning in this connection that about half the saltpeter imported by us from Chile in normal times is used for making explosives.

If nitric acid be indispensable in war, it is not less necessary in peace. It must be had for the growing of the crops. The development of the industry in this country would cut the farmers' fertilizer bill in half; it would save them at least $37,500,000 a year. One result would be a tendency to lower prices for farm products. High-priced food, and the imported nitrate costs $60 a ton.

Air Is Filled With Fertilizer.

The farmer pays $60 notwithstanding the fact that directly above every acre of his land are 33,850 tons of nitrogen in the form of a gas. The air we breathe is four-fifths nitrogen and one-fifth oxygen. The two gases are mixed together, but not chemically combined. When they enter into chemical combination, they form (as already explained) nitric acid.

To accomplish this, use is made of the flaming electric arc. When such an arc, produced by a current of high intensity, passes between two copper electrodes while exposed to the attraction of powerful magnets, it spreads out into the form of a flaming disk. If volumes of air be forced by fans into contact with the arc, in a firebrick-lined steel furnace, the intense heat causes some of the nitrogen in the air to enter into chemical combination with some of the oxygen, forming nitric acid. The latter is then separated out in a pure state, or utilized through various processes for the production of nitrate of lime, nitrate of amonia, or other compounds, mostly for fertilizing purposes.

Germany's Heavy Outlay.

Since the outbreak of the European conflict, Germany has spent $100,000,000 in expanding her nitrogen-producing industry. As a result, she is and will continue to be independent of supplies of saltpeter from Chile, deprived of which, we ourselves could not fight. But for the development of this industry, Germany would long ago have succumbed, for lack of means to carry on the war.

For ourselves there could be no more striking military object-lesson. But the worthwhileness of establishing the industy in this country on an adequate scale becomes more obvious when it is considered that we depend upon nitrogen in large measure for the economic welfare of our people in time of peace, as well as for the defense of the nation in time of war.

Little Bobbie's Pa

BY WILLIAM F. KIRK.

WHEN Pa was eeting his brekfest this morning he didnt say a word for a long time.

What seems to be the matter with my deer lord & hed of the house this morning? sed Ma. You are about as talk-ativ as a wooden Indian. By this time most mornings you wud have finnished saying at least ten thousand words, Ma sed.

I have been thinking, sed Pa, and wen I think I do not speek.

Of what have you been thinking of, sed Ma.

Of what a strainge thing is life, sed Pa. It is a bubbel, a mist that fades away, a dewdrop that dries up in the sun of eter-nity, sed Pa.

Well, sed Ma, life may be everything you call it, but it seems to me that it is vary fine to know life a butiful morning like this. The air is like wine, Ma sed. It may seem like vary thin wine to you, tho, she sed to Pa. Cheer up.

I wud like to cheer up, sed Pa, but my hart is hevvy. I wish I had been born & lived in moar peeceful times, & that you & little Bobbie cud also have lived wen I did, in sum butiful valley ware nothing fought excep wild anminuls.

Well, sed Ma, I suppoas that wud be vary butiful, but we arent living in a peeceful, butiful valley. We are living in a grate city, surrounded by water, which I suppoas only adds to yure gloom, sed Ma. We live in a huge community, we are littel cogs on a grate wheel, & thare is no use bee-moaning the fack, sed Ma. Cheer up. Think of roses & sunshine.

You was happy last nite wen you cum hoam, I sed.

You were indeed, sed Ma, you were singing Walk up America, in a voice loud enuff to walk up most of America & part of Canady, Ma sed.

I am always that way wen I cum hoam, sed Pa, my hart bubbels over with joy at the thot I am approaching the finest littel wife and & finest littel child in the whole town, so I sing. Sumtimes I jest hum, low & sweet, sed Pa, & at other times such as last nite, my joy knows no bounds & I cut loose. Joy is a grate emoshun, Pa sed. It is akin to love.

It is akin to the nabors, too, sed Ma, evvery one of them knew that nite how happy you felt. I suppoae they are talking it oaver at thare brekfast.

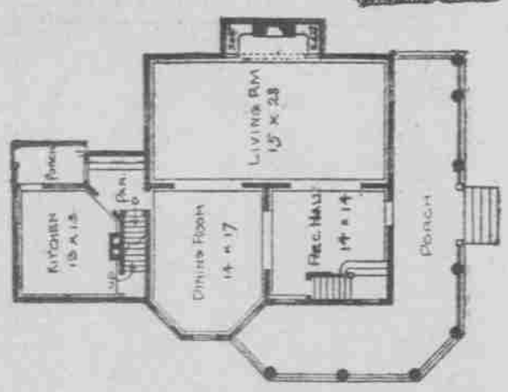
I am sure I doant care, sed Pa. I was born to be talked about, he sed to Ma, & I suppoas sumtimes thay git tired of singing my praises. A man with as many ad-mirers as me, sed Pa, doant mind a littel frank critisism now & then. Grate men always have thare ennemies.

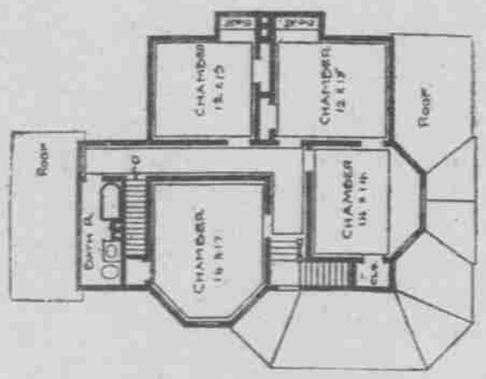
Well, sed Ma, if it is jest the saim to you, deer, I wish after this you wud try hard to be a littel less cheerful at nite & a littel moar cheerful the next morning.

I was brut up not sing at the tabel, sed Pa.

How wonderful of you to remember it, sed Ma. Well, deerest, she sed, I suppoas after all I shud be thankful for yure silent moods. I imagine that by noon you will be feeling fine, sed Ma. I know the simptoms pritty well after all these yeers.

IDEAL COMFORTABLE HOME





THIS cottage contains all the features that make an ideal home. The large porch is particularly enjoyable in the summer. The first floor consists of a hall, living room, dining room, convenient pantry and kitchen. Four large bed rooms with ample closet space and bath room are on the second floor.

News Notes from Movieland

By DAISY DEAN.

KNOWN as "The King of the Comic Opera Stage," Frank Daniels is now enlivening moving picture fans by his droll antics, peculiarly subtle comedy, and pliable facial contortions.

It was as "Peck's Bad Boy" that Mr. Daniels first came into the public's eye, and from that time his has been a continued stream of success. He has appeared in "The Belle of Brittany," "Omar Khayyam," "Hook of Holland" and "Seargeant Brue."

Equally effective has been his work on the screen. As Mr. Jack in "The Escapades of Mr. Jack;" as "Crooky," in the convict comedy of the same name, and in his laugh provoking comicalities in "What Happened to Father," Mr. Daniels has established himself firmly in the hearts of screen fans.

Frank Daniels.

He was born in Dayton, Ohio, on August 28—he refuses to say what year. While very young his family moved to Boston, Mass., in which city he lived until he began fighting life's battle on his own accord.

NORMA TALMADGE IN "GOING STRAIGHT"

"Going Straight" is the title of the new Norma Talmadge picture which will be released by the Triangle in June. The drama aims to solve the problem confronting a respectable man who has a criminal past to live down. Miss Talmadge is the wife of the man, played by Ralph Lewis, and Eugene Pallette is a crook who lives by blackmailing his former pal.

Bernard McConville, the author, has provided a scenario that indicates great dramatic strength. His crook, Jimmy Briggs, recognizes in John Remington his former pal in many a dangerous and profitable job. Remington's wife was also a member of the gang, but both are going straight when Jimmy comes into their life again. Cut backs emphasize the contrast between the old life of the Remingtons and the new. The element of suspense is said to be well developed in the action.

"Going Straight" is the fourth picture Miss Talmadge has completed since she went to the coast to join the Triangle players. "The Missing Links," "Martha's Vindication" and "The Children in the House" were the earlier releases.

Virginia Pearson, the star of "Blazing Love," has carried her silhouette fad farther than ever. In addition to wearing silhouette beauty spots of her friends, she now has a silhouette for the stocking and a silhouette handkerchief. Both attract liberal attention, which may be the purpose for which she invented them.

Mae Murray, beautiful Lasky-Paramount star, is getting acquainted with southern California. In the three months that she has been there, Miss Murray has not had a day's vacation, excepting an occasional Sunday. Since the conclusion of her first picture, however, she has motored to San Diego and is now taking little trips about the country.

Lillian Gish has two hobbies—collecting rare books and playing golf. When eight years old she appeared with Sarah Bernhardt as a fairy dancer and continued with her for two years.

R. A. Long, a lumberman of Kansas City, Mo., has given more than a million dollars in various benefactions during the past year. He laid the foundation of his fortune in a retail lumber yard after he had failed in two other lines of business.

In the NEW YORK THEATRES

BY EMORY B CALVERT

CONSTANCE COLLIER IN "THE MERRY WIVES OF WINDSOR".

GERTRUDE SCOTT. FOLLIES OF 1916 COMING TO NEW AMSTERDAM THEATRE

EDITH WYNNE MATTHISON, IN "CALIBAN" GREAT SHAKESPEAREAN MASQUE.

John Drew, 23 Years Under Frohman Without a Contract, Has New Manager.

NEW YORK, June 3.—For 23 years, John Drew acted under the management of Charles Frohman, who lost his life when the Lusitania was torpedoed.

In all that time no written contract passed between them. Each accepted the word of the other as sufficient.

Now Mr. Drew has left the Charles Frohman company, formed on the great manager's death, and will appear next fall in a dramatization of Thackeray's "Pendennis," by Langdon Mitchell, son of the late S. Weir Mitchell. The piece will be called "Major Pendennis."

Mr. Drew's new manager is John D. Williams, who was Mr. Frohman's right hand man for many years.

Throughout his long and distinguished career, Mr. Drew has only had three managers. He began acting under the direction of Augustin Daly, joining Mr. Frohman in 1892, when he took the role of Paul Blondet in "The masked Ball," at Palmer's theater, with Miss Maude Adams also in the caste.

Every year since then Mr. Drew's opening at the Empire theater has been an eagerly anticipated event of the early theatrical season.

Mr. Mitchell made a stage version of "Vanity Fair," called "Becky Sharp," for Mrs. Fiske. The only other Thackeray novel to be dramatized is "The Newcomes," which Michael Morton prepared for Beerbohm Tree under the style "Colonel Newcome," about ten years ago. Mr. Mitchell is known principally for his brilliant play, "The New York Idea."

"Molly O."

"Molly O," a new piece by Harry B. and Robert B. Smith, now at the Cort theater, is enlivened by the wit of Tom Lewis, the corpulent comedian.

Although the joint authors do not give Mr. Wise many opportunities for humor, he makes the most of them. On the opening night his curtain speech was almost worth the price of admission in itself.

The music of the piece is by Carl Woess and is not up to his best. The audience enjoyed it, however.

It is probable that "Molly O" drew some of its inspiration from "The Masked Model," a musical comedy which stranded in Baltimore lat winter.

There is not much of a plot. Newport and a Vienna student ball are used as places of action, but the action is lacking.

Grace Field triumphed over the difficulties set in her way by the authors and was spirited and agreeable. Good humor radiated from John E. Young, who is remembered for his Saskatchewan song in "The Pink Lady."

Albert Parr replaced Thomas Conkey, who has a minor malady, at short notice, and his performance naturally was not a finished one.

"The Sea Gull."

The Washington Square Players have come into their own and are to occupy the Comedy theater after next month.

The last play the bold, little body of semi-professionals gave in the diminutive Bandbox was a little too ambitious for their talents, but they struggled nobly with it.

The piece was a translation from the Russian of Anton Tchekhov, by Marion Fell, and was, with one exception, the first long drama the players have acted.

"The Sea Gull" deals largely with the artistic temperament. There is much satire about artists and the worshipping public. The principal characters are a famous tragic actress, a noted novelist and a young actress and writer.

Tchekhov paints a masterly picture of Russian live, showing the envy of the young writer, the son of the tragic actress, for Trigorin, the novelist, the love of the two young women for Trigorin and of the young man for the girl, followed by tragedies in the young woman's betrayal and the young man's suicide. It is a great commentary on the artistic ego.

Frank Conroy took the principal laurels of the evening. Others who did good, if not consistent work, were Florence Enright, Roland Young, Walter Frankl, Ralph Roeder and Helen Westley. Mary Morris, a newcomer, shows considerable promise.

The stage settings were far above the usual standard. A Garden scene, with a sky cyclorama, hedges, set pieces and netless border of leaves, was especially praiseworthy.

Miss Scott Deserts Screen.

In these days when so large a majority of the people in the spoken drama seems to be engaged in deserting the stage in favor of the "movies," it is refreshing to chronicle an occasional reversal of the usual course.

Gertrude Scott, who for a long time played important screen roles for the Essanay, and won a large following with her demure beauty and petite figure, has quit the films to join the cast of the Ziegfeld "Follies," now in rehearsal and soon to open for a summer run at the New Amsterdam.

Miss Scott was offered an opportunity to understudy Anne Pennington in one of the important parts and accepted promptly. She has taken a place in the chorus so that she may keep close to her real work, which consists of hoping that Miss Pennington may not go on some night. "Though, of course, my dear, I don't want anything serious to happen to her!" Which is always the way of understudies.

"The World Aflame."

"The World Aflame," Julius Hopp's pageant-drama of the European conflagration, a poetic and realistic work aiming at the democratization of the nations of the world, was presented Monday evening at the Manhattan opera house. The drama is the first of a series of three, dealing with the situations confronting the human race in relation to the European slaughter. "The World Aflame" consists of nine scenes, prologues and edilogues.

The play opens with a prologue, "The Map of Europe," a satirical portrayal of men, women and children representing each country.

The first scene deals with the invasion of Tripoli by the Italian government; the second scene takes place in Rome; the third is a conference of representatives of the Balkan government; the fourth scene a secret meeting of revolutionists. An epilogue, "Desolation," an allegory of war, closes the first part of the drama.

The second part opens with an allegory, "Militarism, the Curse of Europe." The five realistic scenes of the second past are all laid in Germany, portraying the conflicting conditions of the German people and German militarists, the struggle for democracy and, finally, the tragedy of war.

At the new Amsterdam on Thursday evening, Sir Herbert Tree presented "The Merry Wives of Windsor."

In choosing the cast for his last Shakspearean productions, Sir Herbert Tree has kept up the standard of excellence to which he has accustomed New York, and has been most happy in his selection of Miss Henrietta Crossman, who achieved such success in Mr. Hackett's production of the same play earlier in the season. Another notable engagement is Miss Constance Collier for Mistress Ford, while Miss Virginia Fox Brooks was specially engaged for Anne Page, and Miss Maud Milton will play Mistress Quickly.

Lyn Harding was seen as Master Ford and Charles Coleman as Master Page. G. W. Anson having been engaged for Bardolph, and Sydney Greenstreet as the host of the "Garter Inn," with Eric Maxon as Master Fenton. Needless to say, Sir Herbert Tree himself appeared at Sir John Falstaff, and the production in which Mr. Herbert was assisted by Cecil King was the same as at His Majesty's theater, London.

TODAY'S DAINTIEST DISH

"COOKERY IS BECOME A NOBLE SCIENCE"

Strawberry Sponge

By CONSTANCE CLARKE.

WHILE in some homes lunch is quite an elaborate meal, in others it is conspicuous for its unappetizing and uninteresting menu. The impression one gathers is it is not worth while troubling about lunch. If the family are hungry, well, there is something for them to eat; and all energies must be saved for the dinner menu. This is a great mistake, and especially during the hot weather, when appetites flag, and need to be coaxed by dishes pleasing alike to the eye and palate. Here is just the kind of dish suitable for a cold luncheon.

Take a fresh sponge cake; cut the cake through the centre into two layers about one and one-half inches thick. Stalk a box of strawberries, whip half a pint of cream, and flavor it to taste. Put a few halved strawberries and the cream between the layers of cake, then decorate the top with the whipped cream, and pile up a few whole berries on top. Serve at once.

(Monday—Cream Soup.)

NEW STYLISH CAPE

THE most unusual black satin cape shown here is dubbed "The Dragoon" because of the richly embroidered monster on the brilliant satin. A most impressive garment undoubtedly, for it falls in deep folds from the throat and measures yards and yards around the bottom. A high collar with witchtex lining is arranged so that it can fasten high or low, as the wearer desires.